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IN THE U.S. PATENT AND TRADEMARK OFFICE

Inventor                      Martin GEIER et al  
Patent App.                  10/517,675  
Filed                         20 July 2005                                      Conf. No. 1884  
For                             COMPOSITION FOR ATTRACTING BLOOD SUCKING  
                                 ARTHROPODS AND FR  
  
Art Unit                      1616                                      Examiner    Fisher, A  
Hon. Commissioner of Patents  
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DECLARATION UNDER 37 CFR 1.132

I, Martin GEIER, a citizen of Germany, residing at Carl-Maria-Von-Weber-Strasse 7g, D-93053, Regensburg, Germany, declare as follows:

THAT I have a number of years of experience in the preparation and testing of compositions useful as insect-attractants;

THAT my full curriculum vitae may be attached hereto;

THAT I am the Applicant in US Patent Application Serial No. 10/517,675;

THAT in order to demonstrate that the insect-attracting compositions disclosed in US Patent Application Serial No. 10/517,675 and which include: (a) lactic acid or an acceptable salt thereof; (b) caproic acid or an acceptable salt thereof;

and(c) ammonia, in a respective molar ratio of 1: 0.5 - 50: 0.05 to 5, are synergistically effective in that compositions containing these three active ingredients in combination applied to an environment will attract blood-sucking arthropods such as mosquitoes, to a far greater extent than when each of the three individual ingredients: lactic acid, caproic acid and ammonia, is so applied separately to the same environment and that furthermore when the insect-attracting effects of each of the three individual ingredients are added together, and that the insect-attracting effect so obtained of the three combined ingredients is greater than the sum of the insect-attracting effects of the three individually applied insect-attracting compounds, I have either personally conducted or supervised the carrying out of the following tests:

### Tests

For each test, about 20 female *A. aegypti* mosquitoes were used from cultures of Bayer AG in Monheim, 5 - 15 days old, which had no blood meal before. Details of the olfactometer and the experimental procedure are described elsewhere (Geier, M. & Boeckh, J. *Entomol. Exp. appl.* 92, 9-19 (1999); Geier, M. Bosch, O.J. & Boeckh., J. *Chem. Sens.* 24, 647 - 653 (1999). At stimulus onset, the mosquitoes in the start chamber are set free to fly through the olfactometer. During their zig zag flight through the straight tube they encounter alternately air streams from either arm. Following the favoured air stream during upwind flight the mosquitoes enter the respective upwind chamber where they are counted 30 s after stimulus onset. The number of mosquitoes attracted to the chamber serves as the measure for attractiveness of the odor stimulus. Odor stimuli were produced by passing purified air through Erlenmeyer flasks which contain the odour solution (Geier, M. Bosch, O.J. & Boeckh, J. *Chem. Sens.*, 24, 647 - 653 (1999); Geier, M. Bosch, O.J. & Boeckh, J. *J. Exp. Biol.* 202, 1639 - 1648 (1999). The relative concentration of each odor stimulus is given with respect to their molar mixing ratios in the gaseous phase. Stimuli: La = Lactic acid, Am = ammonia, and Ca=

Caproic acid. Values from 10 trials per treatment are lumped together. Treatments were tested in random order.

Table: Measurements of attractiveness of different blend compositions for yellow fever mosquitoes *Aedes aegypti* in a Y-tube bioassay. Effectiveness of the blend differs significantly with respect to the mixing ratio of the single compounds.

Stimulus	Number of tested mosquitoes	Attracted mosquitoes
Lal:Am1.8:Ca0.6	206	192
Lal:Am1.8:Ca3	201	182
Lal:Am5:Ca0.6	200	179
La5:Am1.8:Ca0.6	209	183
Lal:Am0.1:Ca0.6	200	169
Lal:Am1.8:Ca0.1	206	172
La0.3:Am1.8:Ca0.6	203	180
Lal:Am0.01:Ca0.6	198	97
Lal:Am50:Ca0.6	200	68
Lal:AM1.8:CA30	201	76
Lal:Am1.8:Ca0.01	199	79
La50:Am1.8:Ca0.6	205	81
La0.01:Am1.8:Ca0.6	199	79
Lal	202	46
Am1.8	200	2
Ca0.6	204	3
Am50	199	11
Ca30	198	8
La50	210	55

THAT based upon the data presented above, I conclude that the compositions according to my patent application and which contain (a) lactic acid or an acceptable salt thereof; (b) caproic acid or an acceptable salt thereof; and (c) ammonia, in a respective molar ratio of 1: 0.5 - 50: 0.05 to 5, are synergistically effective in attracting blood-sucking arthropods, such as mosquitoes, and I further conclude that these compositions consistently attract 85% of the tested mosquitoes, which is a surprisingly high level of attractiveness that I would not have expected;

THAT I am aware that the Examiner has cited Chem. Senses 25: 323 to 330, 2000, Bosch et al, "Contribution of Fatty Acids to Olfactory Host Findings of Female Aedes aegypti", as a basis for concluding that the invention as disclosed and originally claimed in my patent application was either anticipated or obvious and therefore unpatentable;

THAT I am listed as the second author in the abovementioned Bosch et al publication and that I am thoroughly familiar with the test procedures and test results set forth in the publication, since I am one of the experimenters who set up the test protocol and carried out the experiments set forth in the publication;

THAT in my opinion the high level of synergistic attractiveness demonstrated toward the tested mosquitoes by my abovementioned insect attracting compositions which contain (a)

lactic acid or an acceptable salt thereof; (b) caproic acid or an acceptable salt thereof; and (c) ammonia, in a respective molar ratio of 1: 0.5 - 50: 0.05 to 5, would not have been expected from reading the Bosch et al publication because Figure 4 at the top of page 328 of BOSCH et al.

THAT Bosch et al do not specifically disclose any insect-attracting compositions that contain lactic acid, caproic acid and ammonia and do not present any test data for such compositions at any weight ratio, let alone in a respective molar ratio of 1: 0.5 - 50: 0.05 to 5 according to my invention;

THAT Bosch et al present test data in Table 4 showing the overall ability of combinations of lactic acid, ammonia with either a C<sub>3</sub> fatty carboxylic acid, a C<sub>5</sub> fatty carboxylic acid, or a combination of the C<sub>3</sub> and the C<sub>5</sub> carboxylic acids and specifically show that, a combination of lactic acid with either a C<sub>3</sub> or a C<sub>5</sub> fatty carboxylic attracts about 50% of the mosquitoes tested and further show that when both the C<sub>3</sub> and the C<sub>5</sub> carboxylic acid are employed together with the lactic acid, there is an improvement from a rate of 50% attractiveness to about 68% attractiveness;

THUS I conclude that the rate of insect attractiveness of 85% achieved according to the compositions according to my invention which contain (a) lactic acid or an acceptable salt

thereof; (b) caproic acid or an acceptable salt thereof; and (c) ammonia, in a respective molar ratio of 1: 0.5 - 50: 0.05 to 5, would not have been expected from reading the Bosch et al publication;

THAT I am aware of no data inconsistent with those presented above or which would lead one to a contrary conclusion; and

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 USC 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Date

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Martin Geier